

mogeton, Brasenia, Utricularia and other water plants, were quite dry, raised the question as to how these aquatics sustain such drying out of their habitats. One kettle hole, which I found golden with the flowers of *Utricularia vulgaris*, in July, 1929, was dry, and the plant can scarcely develop this year unless there is more moisture in the next few weeks. But perhaps they rest and take no harm, and reappear when conditions are suitable, if such dryness is not repeated too many seasons in succession.

RAYMOND H. TORREY

PROCEEDINGS OF THE CLUB

MEETING OF FEBRUARY 19, 1930

The meeting was called to order at The New York Botanical Garden at 3:30 P. M. by President Sinnott. The minutes of the meetings of January 15 and February 4 were read and approved. Twenty-two members were present.

A motion was made and seconded that the following members be made life members of the club:

Mr. George E. Osterhout, Windsor Weld Company, Colorado, and Miss Caroline Coventry Haynes, Highlands, Monmouth County, New Jersey.

A motion was made and seconded that our previous president, Dr. Denslow, be made a life member.

The following were unanimously elected to membership in the club:

Mr. Alexander Hirshkowitz, 1760 Montgomery Avenue, New York City; Mrs. Jennie L. S. Simpson, Hunter College, Park Ave. at 68th Street, New York City; Miss Marjorie Aldous, 43 High Street, Passaic, New Jersey.

The resignations of Miss Johanna Oppenheimer and Mr. Hans Wilkins were accepted.

The death of Dr. A. H. MacKay was also reported.

A committee consisting of Dr. Marshall A. Howe and Dr. Forman T. McLean, appointed at the meeting of January 3, to prepare a minute on the death of Maturin L. Delafield, reported as follows:

Maturin Livingston Delafield, whose death in Lausanne, Switzerland, on December 18, 1929, at the age of 60, we much regret to record, was Librarian of the Torrey Botanical Club

for four years (1889-'92) and Treasurer of the Club for three years (1898-1900). His services to the Club are held in grateful remembrance by its older members. In 1899, he became a Patron of the Botanical Society of America, a distinction that he shared later with Mr. J. P. Morgan and Dr. and Mrs. N. L. Britton. Ill health unfortunately led to his retirement from business and from office in the Club, after which, he lived abroad, chiefly in Switzerland. However, he continued his interest in plants and his membership in the Club. In view of the final passing of a member of forty two years standing.

BE IT, THEREFORE, RESOLVED, that the Torrey Botanical Club sincerely deplores the loss of a faithful and accomplished friend in the death of Maturin Livingston Delafield; and that a copy of this minute be transmitted to his bereaved family.

Mr. W. S. Bourn of the Boyce Thompson Institute, gave a talk on "Destruction of Aquatic Plants in the Sounds Region of Eastern North Carolina." He described the changes in the aquatic flora in some of the fresh water lakes along the coast of North Carolina caused by admitting salt water through the canals. This apparently resulted in the destruction of the pond weed which is one of the principal food plants of the wild fowl. He strongly advocated the replacement of tide locks in the canals in order to restore the fresh water condition of the lakes.

Professor E. W. Sinnott followed with an interesting account of "The Relations between the Characters of the Petiole and those of its Constituent Cells in Acer."

Meeting adjourned at 5:00 P. M.

Respectfully submitted,
FORMAN T. McLEAN
Secretary

MEETING OF MARCH 4, 1930

The meeting was called to order at the American Museum of Natural History at 8:15 P. M. by President Sinnott. Fifty-one members were present.

It was moved by Dr. Benedict and seconded by Dr. Harper that the club go on record as favoring Legislative statute for the protection of native wild plants. The secretary was instructed to send communications to this effect to the Governor of New York and local representatives in the Legislature.

The following were unanimously elected to membership in the club:

Mr. N. C. Thornton, Boyce Thompson Institute for Plant Research, Yonkers, New York; Mr. Wm. Conway Price, Boyce Thompson Institute for Plant Research, Yonkers, New York.

The following resignations were accepted:

Dr. Winifred J. Robinson and Dr. Lewis E. Wehmeyer.

The death of Mr. Charles E. Foote was reported with regret.

Mr. Carl T. Ramsey gave a talk on "Insect Pollinating Mechanisms in Native and Cultivated Orchids."

The orchid family is not only cosmopolitan but truly a multitudinous host, embracing 400 genera and about 15,000 known living species. Orchids are found at all latitudes and altitudes from sea level to 13,000 feet and from the tropics north to the limits of vegetation towards the poles. In North America, north of Mexico there are 146 species.

All of our existing orchids are dependent on insects for pollination. We do not know just when the orchids started their flirtation with the insects but we may safely assume that it may have been during the Cretaceous age, possibly 30 million years ago. Early in their development they not only became the most gorgeous and exclusive race of plants but likewise learned to climb trees and precipitous cliffs to find the sunlight they always demand even in the densest tropical forest. The strange and fascinating forms of the orchids are all fashioned to suit them for insect pollination. Until this is fully understood the marvel of the orchids' delicate and tinted lips cannot be appreciated. Further, in most cases each species has a separate insect to pollinate it. This, of course, makes the operation a most uncertain one, so comparatively few orchids ever set seeds. How this interesting and complicating relationship first arose is almost beyond speculation. The illustrious Darwin clearly demonstrated a half century ago that all of this was an effort to produce a healthy race when fusing new blood in the process of cross-pollination. There are comparatively few orchid hybrids, but every orchid is the result of a cross, few of them being even able to develop seed from their own pollen. Further the structure is such that a pollination of orchids without the help of insects is almost impossible under natural conditions. The showy orchid, one of the handsomest of our native species is

adapted to pollination by wild bees. The sticky masses of pollen are so placed that they are sure to adhere to the eyes of the bee when he visits the flower and need to be dried out by exposure to the air before they rise to a position where they can pollinate another flower. This insures that the pollen will only be used in cross-pollination with a flower from another plant. *Arethusa* has a much simpler arrangement, its pollen sticking like a porous plaster to the back of the bee already to be scraped by the stigma of the next flower visitor.

Mr. Ramsey went on to tell of the insects that pollinate different species of the fringed orchids, and the mechanisms that insure pollination; how the different times of flowering discourage hybridizing, despite which occasional hybrids are found,—but they are exceptional. He also intimated that at least one native orchid, *Calopogon*, is a practical joker and a fraud, enticing the bumble bee into the flower, tumbling him about and plastering him with sticky pollen, then tumbling him out to seek another flower, without any reward of nectar at all! That the bee, undaunted goes on the next orchid bloom and pollinates it, only to get the same rough treatment, speaks more for his busy industry than his shrewdness.

In many of the orchids, the flower structure not only attracts one particular insect, but also guides and forces him to follow certain narrow paths, to insure that he does the required work—whether he gets paid in nectar or not. Most of the orchids, unlike our native *Calopogon*, are honest and reward their insect benefactors properly. To further attract the proper insects, some of the orchids have nocturnal fragrance as well as brilliant coloring and grotesque form.

Mr. Ramsey also described the remarkable structures of the Lady's Slipper and many of the exotic orchids, showing how each is cunningly fitted for pollination by a particular insect.

The talk was illustrated by beautifully colored slides of the orchids as Mr. Ramsey has found them growing, and drawings to show details of the devices for pollination.

Meeting adjourned at 9:40 P. M. for refreshments.

Respectfully submitted,
 FORMAN T. MCLEAN
Secretary

MEETING OF MARCH 19, 1930

The meeting was called to order at The New York Botanical Garden at 3:30 P. M. by President Sinnott. Minutes of the meetings of February 19 and March 4 were read and approved. Twenty-five members were present.

The following were unanimously elected to membership in the club:

Mr. L. Gordon Utter, Brooklyn Botanic Garden, Brooklyn, New York; Miss Margaret Paine Fisher, Woodrow Wilson Hotel, New Brunswick, New Jersey; Miss A. Thurston, 93 Belvedere Avenue, Yonkers, New York.

The following resignations were accepted:

Mr. Arthur C. Lasswell, Mr. Arthur Carpenter, and Mr. Charles E. Raynal.

A letter was read by our President from the Wisconsin Go-Hiking Club urging us to save the Wolf River district. The matter was brought up and discussed but no action was taken regarding it.

Mr. Chester W. Emmons gave a talk on "Clamp Connections on Mycelia of Fungi."

Professor J. S. Karling gave a talk on "Recent Studies on Chytrids."

There was a discussion after each talk.

Meeting adjourned at 5 P. M.

Respectfully submitted,

FORMAN T. MCLEAN, *Secretary*

MEETING OF APRIL 1, 1930

The meeting was called to order at the American Museum of Natural History at 8:15 P. M. by President Sinnott. Eighty four members and friends were present.

Mrs. R. P. Wodehouse, 75 Ridge Drive, Yonkers, New York, was unanimously elected to membership in the club.

Professor M. A. Chrysler of Rutgers University gave a talk on "Color Photography and Autochrome Pictures of the New Jersey Pine Barrens." He showed lantern slides made by three different methods, a large number of them illustrating the vegetation of the New Jersey pine barrens.

Meeting adjourned at 9:40 P. M. for refreshments.

Respectfully submitted

FORMAN T. MCLEAN, *Secretary*